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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/667,502	09/22/2000	Masahito Kobayashi	197399US2	9729

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EXAMINER
KURIAN, ROSHNI

ART UNIT	PAPER NUMBER
2829	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/667,502	Applicant(s) KOBAYASHI ET AL.	
	Examiner Roshni Kurian	Art Unit 2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4-5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Title

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The disclosure is objected to because of the following informalities: The specification includes several misspelled words. For example, on page 3, line 4, the word “head” is misspelled and appears as “hed”. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3,5-8, and 15-18 rejected under 35 U.S.C. 102(b) as being anticipated by Nakajima et al (US 5642056).

- Regarding Claims 1 and 5, Nakajima et al, in Figure1, discloses a probe method comprising steps of:
  - moving a main chuck (15) to align an object of inspection (14) on the main chuck with probes (23) of a probe card (22) located over the main chuck;
  - moving the main chuck (15) toward the probe card (22), thereby bringing electrodes of the object of inspection into contact with the probes (column 6, lines 17-19);
  - overdriving (70) the main chuck (15) toward the probe card (22) while measuring a load applied to the object of inspection (14) by contact with the probes (23) by means of a sensor (55) and controlling (70) the movement of the main chuck in accordance with the measured load; and
  - inspecting electrical properties of the object of inspection by means of the probes (23)

- Regarding Claims 2 and 7, Nakajima et al discloses a probing method wherein said control of the movement of the main chuck (Figure1,15) is control of an overdrive based on the measured load, such that the load has a given value (column 7, lines 14-20).

- Regarding Claims 3 and 8, Nakajima et al, in Figure1, discloses a probing method wherein said control (70) of the movement of the main chuck (15) includes steps of

obtaining (column 7, lines 14-20) a distortion of the main chuck in accordance with the measured load and correcting at least one of the dislocations between the object of inspection and the probes in X-, Y-, and θ-directions (column 8, lines 17-22)in accordance with the distortion.

- Regarding Claim 6, Nakajima et al, in Figure1, discloses a probing method wherein said sensor (50) is located on at least one of the lower parts of the main chuck (15) and between an LM guide and an XY- stage on which the main chuck (15) is set.
- Regarding Claims 15 and 16, Nakajima et al, in Figure1, discloses a probe apparatus comprising:
  - a main chuck (15) carrying an object of inspection (14) thereon
  - a probe card (22) having a plurality of probes (23) located over the main chuck (15);
  - a drive mechanism for moving the main chuck (15) in X-, Y-, Z-, and θ-directions (See column 8, lines 17-22)
  - a pressure sensor (55) adapted to measure a load applied to the object of inspection (14) by the probes (23) when the drive mechanism moves the main chuck toward the probe card (22) so that the object of inspection (14) on the main chuck (15) is brought into contact with the probes (23); and
  - a controller (70) for controlling the movement of the main chuck (15) and obtaining a distortion of the main chuck in accordance with a position where the probes (23) touch the object of inspection (14) and the load measured by means of the pressure sensor.

- Regarding Claims 17, Nakajima et al, in Figure1, discloses a probing apparatus wherein said controller (70) controls an overdrive in accordance with the measured load so that the load has a given value (column 7, lines 14-20).

- Regarding Claims 18, Nakajima et al, in Figure1, discloses a probing apparatus wherein said controller (70) corrects at least one of the dislocations between the object of inspection (14) and the probes (23) in X-, Y-, and θ-directions (column 8, lines 17-22) in accordance with the distortion.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 4,9-14, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al as applied to claims1-3, 5-8, and 15-18 above, and further in view of Schwartz et al (US 5657394).

- Regarding Claim 4, Nakajima et al discloses all the claimed elements except the use of a polish plate to polish probe tips. However, Schwartz et al, in Figure 4, discloses a probe card inspection system wherein a polishing mechanism (140) for polishing probe tips (90) is located right under the probes (60) and is moved

and overdriven (122) toward the probe card (45), thereby bringing the polish mechanism (140) into contact with the probes (60) and measuring (130) a load applied to the polish plate by the probes by means of a pressure sensor. Therefore, it would have been obvious to one of ordinary skill in the art to modify the probing apparatus taught by Nakajima and incorporate Schwartz's polishing mechanism since it is capable of polishing the probe tips so that the probe tips can make sufficient contact with the object under inspection to allow for efficient testing.

- Regarding Claim 9, Nakajima et al discloses a probing method wherein a main chuck (15) is moved in X-, Y-, and θ-directions (column 8, lines 17-22) to align an object of inspection (14) on the main chuck with probes (23) of a probe card (22) located over the main chuck. Additionally, the main chuck (15) moves in the Z-direction (column 8, lines 17-22) bringing electrodes of the object of inspection into contact with the probes (column 6, lines 17-19). The main chuck (15) is overdriven (70) toward the probe card (22), and the electrical properties of the object of inspection are inspected by means of the probes (23). However, Nakajima does not teach the use of a polishing mechanism to polish the tips of the probes. Schwartz et al, in Figure 4, discloses a probe card inspection system wherein a polishing mechanism (140) for polishing probe tips (90) is located right under the probes (60) and is moved and overdriven (122) toward the probe card (45), thereby bringing the polish mechanism (140) into contact with the probes (60), and measuring (130) a load applied to the polish plate by the probes by

means of a pressure sensor. Additionally, the movement of the main chuck (100) is controlled (93) in accordance with the measured load. Therefore, it would have been obvious to one of ordinary skill in the art to modify the probing apparatus taught by Nakajima and incorporate Schwartz's polishing mechanism since it is capable of polishing the probe tips so that the probe tips can make sufficient contact with the object under inspection to allow for efficient testing.

- Regarding Claim 10, Schwartz et al, in Figure 4, discloses a probing method wherein said sensor (130) is set on the polishing mechanism (140).
- Regarding Claim 11, Nakajima et al, in Figure1, discloses a probing apparatus wherein controller (70) controls the movement and overdrive (See column 7, lines 14-20) of the main chuck (15).
- Regarding Claim 12, Nakajima et al, in Figure1, discloses a probing method wherein said control (70) of the movement of the main chuck (15) includes steps of obtaining (column 7, lines 14-20) a distortion of the main chuck in accordance with the measured load and correcting at least one of the dislocations between the object of inspection and the probes in X-, Y-, and θ-directions (column 8, lines 17-22) in accordance with the distortion.
- Regarding Claim 13, Schwartz et al, in Figure 4, discloses a probing method wherein control of the overdrive (122) of the chuck (100) includes steps of obtaining a distortion of the polish plate in accordance with the relation between the load applied to the polish plate (140) and the distortion of the polish plate (140, see column 12, lines 46-51). Schwartz et al also teaches that the spring

constant of the probes (60) from the distortion and overdrive of the polishing mechanism (140) is measured (130 or see Column 12, lines 46-51), indicating the load applied to the main chuck (100) by the probes (60). Additionally, Schwartz et al discloses a controller (93) for controlling the drive mechanism (122) in accordance with the measured load applied in the position where the probes touch the main chuck (100).

- Regarding Claim 14, Nakajima et al, in Figure1, discloses a probing method which includes steps of obtaining (column 7, lines 14-20) a distortion of the main chuck in accordance with the measured load by means of a pressure sensor (55) and correcting dislocations between the object of inspection and the probes in X-, Y-, and θ-directions (column 8, lines 17-22) in accordance with the distortion.
- Regarding Claim19, Nakajima et al, in Figure1, discloses a probing apparatus comprising:
    - a main chuck (15) carrying an object of inspection (14) thereon
    - a probe card (22) having a plurality of probes (23) located over the main chuck (15); and
    - a drive mechanism for moving the main chuck (15) in X-, Y-, Z-, and θ-directions (See column 8, lines 17-22).

However, Nakajima et al does not teach the use of a polishing mechanism which comes into contact with the probes. Schwartz et al, in Figure 4, discloses a probing apparatus wherein a polishing plate (140) is attached to the main chuck (100). Also Schwartz et al teaches that the polishing mechanism (140) is moved and overdriven

(122) toward the probe card (45), thereby bringing the polish mechanism (140) into contact with the probes (60), and measuring a load applied to the polish plate by the probes by means of a pressure sensor (130). Additionally, Schwartz et al discloses a controller (93) for controlling the drive mechanism (122), the controller including a mechanism (130) for obtaining the spring constant of the probes (60) and chuck (100) in accordance with the measured load applied in the position where the probes touch the main chuck (see column 12, lines 46-51). Therefore, it would have been obvious to one of ordinary skill in the art to modify the probing apparatus taught by Nakajima and incorporate Schwartz's polishing mechanism since it is capable of polishing the probe tips so that the probe tips can make sufficient contact with the object under inspection to allow for efficient testing.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roshni Kurian whose telephone number is (703) 308-7607. The examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (703) 308-1680. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7607 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-4900.

2-25-02

RK
February 22, 2002

MICHAEL J. SHERRY
PRIMARY EXAMINER